AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A method for calibrating a plurality of gas analyzers, comprising:

providing a first gas analyzer that measures a first concentration of a first gas;

providing a second gas analyzer that measures a second concentration of a second gas;

providing a span gas that includes a mixture of said first gas and said second gas;

supplying a calibration mixture to both said first gas analyzer and said second gas analyzer, wherein said calibration mixture includes said span gas and a non-reactive zero gas; and

varying at least one of a third concentration of said non-reactive zero gas and a fourth concentration of said span gas in said calibration mixture as a function of time, wherein said at least one of said third concentration and said fourth concentration is varied at a rate that is slower than a decay rate of said calibration mixture.

2. (Currently Amended) ~~The method of Claim 1~~ A method for calibrating a plurality of gas analyzers, comprising:

providing a first gas analyzer that measures a first concentration of a first gas;

providing a second gas analyzer that measures a second concentration of a second gas;

providing a span gas that includes a mixture of said first gas and said second gas;

supplying a calibration mixture to both said first gas analyzer and said second gas analyzer, wherein said calibration mixture includes said span gas and a non-reactive zero gas; and

varying at least one of a third concentration of said non-reactive zero gas and a fourth concentration of said span gas in said calibration mixture as a function of time, wherein at least one of said third concentration and said fourth concentration is varied as a linear function of time.

3. (Currently Amended) The method of Claim ~~1~~ 2 wherein said first gas analyzer generates a first set of readings of said first concentration and said second gas analyzer generates a second set of readings of said second concentration.

4. (Original) The method of Claim 3 wherein a controller generates a first response function of said first gas analyzer based on said first set of readings and said controller generates a second response function of said second gas analyzer based on said second set of readings.

5. (Original) The method of Claim 4 wherein said first gas analyzer has a predetermined response to said first gas and said controller determines an exact

concentration of said second gas in said calibration mixture based on said first set of readings.

6. (Original) The method of Claim 5 wherein said predetermined response is determined through precalibration of said first gas analyzer.

7. (Original) The method of Claim 5 wherein said predetermined response is linear.

8. (Original) The method of Claim 5 wherein said first gas analyzer is a flame ionization detector that measures HC.

9. (Original) The method of Claim 5 wherein said controller calibrates said second gas analyzer based on said second response function and said exact concentration.

10. (Original) The method of Claim 5 wherein said controller diagnoses a defect in said second gas analyzer based on said second response function and said exact concentration.

11. (Original) The method of Claim 3 further comprising:

mathematically compensating for a time delay in acquiring at least one reading in said first set of readings and said second set of readings.

12. (Currently Amended) The method of Claim ~~1~~ 2 wherein said first gas and said second gas are selected from the group consisting of hydrocarbons (HC), nitrogen oxides (NO_X), carbon monoxide (CO), and carbon dioxide (CO_2).

13. (Currently Amended) ~~The method of Claim 3 further comprising:~~ A method for calibrating a plurality of gas analyzers, comprising:

providing a first gas analyzer that measures a first concentration of a first gas and that generates a first set of readings of said first concentration;

providing a second gas analyzer that measures a second concentration of a second gas and that generates a second set of readings of said second concentration;

providing a span gas that includes a mixture of said first gas and said second gas;

supplying a calibration mixture to both said first gas analyzer and said second gas analyzer, wherein said calibration mixture includes said span gas and a non-reactive zero gas;

varying at least one of a third concentration of said non-reactive zero gas and a fourth concentration of said span gas in said calibration mixture as a function of time;

increasing said third concentration as a function of time to generate a first decreasing set of readings of said first concentration and a second decreasing set of readings of said second concentration; and

decreasing said third concentration as a function of time to generate a first increasing set of readings of said first concentration and a second increasing set of readings of said second concentration.

14. (Original) The method of Claim 13 wherein a controller generates a first response function of said first gas analyzer based on a composite of said first decreasing set of readings and said first increasing set of readings, and said controller generates a second response function of said second gas analyzer based on a composite of said second decreasing set of readings and said second increasing set of readings.

15. (Currently Amended) The method of Claim ~~1~~ 2 wherein said calibration mixture is blended in a mixing chamber.

16. (Currently Amended) The method of Claim ~~1~~ 2 wherein a portable device that includes said first gas, said second gas, said zero gas, and a mixing chamber supplies said calibration mixture.

17. (Currently Amended) A method for calibrating a plurality of gas analyzers, comprising:

providing a span gas supply that includes a mixture of a first gas and a second gas;

providing a diluent gas supply that includes a non-reactive zero gas;

providing at least one diluent flow controller that controls a first concentration of said non-reactive zero gas in a calibration mixture of said first gas, said second gas, and said non-reactive zero gas; and

providing at least one span gas flow controller that controls a second concentration of said mixture in said calibration mixture,

wherein at least one of said first concentration and said second concentration is varied in said calibration mixture as a function of time and wherein said at least one of said first concentration and said second concentration is varied at a rate that is slower than a decay rate of said calibration mixture.

18. (Currently Amended) The ~~self-contained divider~~ method of Claim ~~17~~ 20 wherein said calibration mixture is supplied to an emission analysis test bench.

19. (Currently Amended) The ~~self-contained divider~~ method of Claim ~~17~~ 20 further comprising:

a mixing chamber that blends said calibration mixture;

a first valve that directs said calibration mixture to an input of said mixing chamber; and

a second valve that directs said calibration mixture from an output of said mixing chamber to an emission analysis test bench.

20. (Currently Amended) ~~The self-contained divider of Claim 17~~ A method for calibrating a plurality of gas analyzers, comprising:

providing a span gas supply that includes a mixture of a first gas and a second gas;

providing a diluent gas supply that includes a non-reactive zero gas;

providing at least one diluent flow controller that controls a first concentration of said non-reactive zero gas in a calibration mixture of said first gas, said second gas, and said non-reactive zero gas; and

providing at least one span gas flow controller that controls a second concentration of said mixture in said calibration mixture,

wherein at least one of said first concentration and said second concentration is varied in said calibration mixture as a function of time, wherein said function of time is linear.

21. (Previously Presented) A method for calibrating a plurality of gas analyzers, comprising:

providing a first gas analyzer that measures a first concentration of a first gas and that generates a first set of readings of said first concentration;

providing a second gas analyzer that measures a second concentration of a second gas and that generates a second set of readings of said second concentration;

providing a span gas that includes a mixture of said first gas and said second gas;

supplying a calibration mixture to both said first gas analyzer and said second gas analyzer, wherein said calibration mixture includes said span gas and a non-reactive zero gas;

varying at least one of a third concentration of said non-reactive zero gas and a fourth concentration of said span gas in said calibration mixture as a function of time; and

mathematically compensating for a time delay in acquiring at least one reading in said first set of readings and said second set of readings.